CH2M HILL Hanford Group, Inc.	**Manual**	**HNF-IP-0842**
	Volume	**18, Waste Management**
RADIOACTIVE MATERIAL/WASTE SHIPMENTS	**Section**	**2.1, REV 1a**
	Page	**1 of 17**
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APPROVAL AUTHORITY: **G. A. Willingham**

AUTHOR: **J. P. McGrogan**

1.0 PURPOSE AND SCOPE

This procedure outlines the requirements associated with preparing radioactive materials for transport, and transporting radioactive materials on and off the Hanford Site. This procedure applies to all transportation and packaging operations involving radioactive materials under CH2M HILL Hanford Group, Inc. (CH2M HILL) cognizance. This procedure is based on specific requirements outlined in policies, procedures, U.S. Department of Energy (DOE) orders, and applicable federal regulations.

2.0 RESPONSIBILITIES

2.1 Facility Manager

The facility manager packages and ships radioactive material/waste for *on-site* transport:

1. Designates personnel to become authorized shippers for packaging and shipping hazardous materials, and initiates the authorization process.

2. Ensures that only appropriately trained personnel are employed to load and transport radioactive material packages and that these personnel comply with applicable operating procedures that provide for nuclear safety, environmental, quality assurance, security, exposure and contamination control, and applicable federal, state, and contractor packaging and transportation requirements for fissile and other radioactive materials.

3. Ensures that only approved packages are used.

2.2 Vehicle Driver

As determined by management, ensures appropriate training and qualification, with applicable commercial driver's license and endorsements, for transporting hazardous materials is current.

2.3 Authorized Hazardous Materials Shipper

1. Verifies that all **Packaging Specific Safety Document (PSSD)** requirements governing the use of each package are incorporated into applicable operating procedures and followed.

2. Resolves all questions before shipment concerning any special services required while the package is being transported to the consignee's facility.

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3.0 PROCEDURE

3.1 Normal Radioactive Materials Shipment Procedures

A Radioactive Shipment Record is required for each radioactive material shipment. An Onsite Routine Radioactive Shipment Record issued by Waste Management Services is required for routine radioactive material shipments (see paragraph 3.1.5). (4.7.e, 4.7.f, 4.7.g, 4.7.h)

NOTE: In addition to this general procedure, specific operating procedures, prepared and controlled by the facility operations, shall be followed when packaging and transporting radioactive material shipments on site.

3.1.1 Identification of Material

For radioactive material to be regulated by the Department of Transportation (DOT), it must meet the definition of 49 CFR 173.403. If the material meets this definition, the shipper completes the following steps.

1. Determine the radionuclides that are present (e.g., plutonium-239, uranium-233, and cesium-137) **and associated area configurations**.

   NOTE: Abbreviations are authorized.

2. Determine the total activity in terms of becquerels (Bq) or Terabecquerels (TBq).

   a. If fissile radionuclides are present (49 CFR 173.403), determine the **total** grams of fissile material for criticality control.

   b. Determine if material qualifies as a Hazardous Substance Reportable Quantity (RQ). See 49 CFR 171.8 and 49 CFR 172.101, Appendix A, Table 2.

3. Determine if material will be shipped as “normal form” or “special form” (49 CFR 173.403).

4. If normal form, determine the physical form and the chemical form of the radioactive material.

5. Determine if other hazardous materials are present or if other hazardous characteristics are exhibited.

6. Identify appropriate A_1 or A_2 values for radionuclides present.

   - Determine A_1 values for radionuclides in special form (49 CFR 173.433, 173.435).

   - Determine A_2 values for radionuclides in normal form (49 CFR 173.433, 173.435).

7. Determine quantity category based on the radionuclides present, their A_1 or A_2 values, as appropriate, and the total activity in Becquerels in each package (e.g., cask, box, drum). See the following sections of 49 CFR for the quantities listed:

   - Low Specific Activity Radioactive (LSA I, II or III) Material, or Surface Contaminated Object (SCO) 49 CFR 173.403 **and 49 CFR 173.427**. **(If the LSA or SCO contain fissile radionuclides, they must meet the requirements for fissile excepted.)**
   - Limited Quantity, 49 CFR 173.403 and 49 CFR 173.421-426 (4.7.f, 4.7.g, 4.7.h., 4.7.i)
   - Type A Quantity, 49 CFR 173.431(a) (4.7.k)
   - Type B Quantity, 49 CFR 173.431(b) (4.7.k)
   - Highway Route Controlled Quantity (HRCQ), 49 CFR 173.403.

3.1.2 Packaging Selection, Preparation, and Transport of Material

The shipper completes the following steps to prepare a package for shipping.

1. Select a packaging according to 49 CFR and based on the following considerations:

   a. Quantity, type, form, and classification of material to be packaged.

   b. Need for shielding and/or cooling.

   c. Size, shape, and weight of material to be shipped; if other hazards present, compatibility with those hazards.

   d. Destination, mode of transport, and consignee's ability to receive the shipment.

   e. Dose rate and contamination considerations.

   f. Availability of shipping packages, including "industrial packagings," IP-1, IP-2, and IP-3. (49 CFR 173.410-411)

   g. If waste, the additional requirements of the Hanford Site Solid Waste Acceptance Criteria.

   h. Thermal limits of 49 CFR 173.442, if heat producing radionuclides are being shipped.

   i. The fissile **quantity** for each package based on an appropriate criticality analysis if packages contain greater than **excepted** quantities of fissile material. (49 CFR 173.453)

2. Ensure packaging meets DOT regulations as found in 49 CFR 173.401-173.478 or in

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packages with a valid Certificate of Compliance (COC). (4.7.c, 4.7.d, 4.7.e, 4.7.f, 4.7.g, 4.7.h, 4.7.i, 4.7.j, 4.7.k, 4.7.l, 4.7.m, 4.7.n, 4.7.o)

a. If this requirement cannot be met, alternate packaging with a documented equivalent degree of safety, either by design or through the use of administrative controls such as **Hanford Sitewide Transportation Safety Document (TSD) approved PSSD** can be used. If such alternate packaging is used, use of such packaging must strictly adhere to requirements of a **PSSD** reviewed and approved by the site approval authority.

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b. All packaging and shipping procedures used must reflect the requirements of the **PSSD** before the use of the package.

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NOTE: DOT 7A packages are authorized by 49 CFR 173.415 and addressed on site by the Test and Evaluation Document for DOT Specification 7A Type A Packaging. (4.7.c)

3. Ensure the package has been inspected, maintained, and approved for use and transport.

4. Load the package with authorized contents only. Assemble and seal the package in accordance with appropriate procedures.

5. Arrange for a radiological survey of the package(s) to determine that removable contamination limits are not exceeded according to HNF-5183, "Tank Farms Radiological Control Manual," for on site, and 49 CFR 173.441 and 173.443 for off site. (4.7.l, 4.7.n)

6. Mark and label each package in compliance with 49 CFR or its **PSSD**, where applicable. To the extent practical, provide the following information on each package:

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a. Responsible operating component.

b. Gross weight if > 50 kg (110 lbs).

c. Radioactive labels (use either DOT-approved labels or **PSSD**-approved alternative). Written information required on the labels include, in the following order: Contents and Activity for the Radioactive White -I, Radioactive Yellow-II, and Radioactive Yellow-III labels, while a Transportation Index (TI) is required in addition on the Radioactive Yellow-II and III. Any applied labels are required on two opposite sides of the package as referenced in 49 CFR 172.406 (e)(2). (4.6.dd)

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d. Other hazard class labels, as appropriate. Use DOT-approved labels. These labels should also be on two opposite sides of the package within 6 inches of the radioactive labels as referenced in 49 CFR 172.406 (e). (4.6.dd)

7. Determine the category and the security requirement if the material is special nuclear material (SNM).

8. Determine when consignee (receiver) can **accept** delivery. Verify the receiving facility is authorized to receive the radioactive material being shipped. If requested, notify the consignee of estimated time of arrival just before shipment departure. For each shipment of fissile or greater than Type A quantities of radioactive material and for gas poisonous by inhalation, notify the consignee of the dates of the shipment, the expected date of arrival, and any special loading and unloading instructions. The receiving facility contacts the shipper by the end of the first working day after the estimated arrival date if the shipment has not been received.

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9. Schedule appropriate vehicle and tie-down equipment suitable for the shipment. Before loading, ensure the vehicle (tractor and/or trailer) preventive maintenance, and Class A/B, or equivalent, inspections are current. Contact Waste Management Services to coordinate and schedule road closures when required by **PSSD** or by safeguards and security requirements.

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10. Ensure a radiological control technician performs a removable contamination and deep dose radiation survey of the package(s) and the vehicle and vehicle cab for release per applicable limits and swipe requirements using the 49 CFR Part 173 for off-site shipments or HNF-5183, Table 2-2, limits for on-site shipments **and that they complete appropriate sections on the ORRSR or RSR**. (4.7.n)

11. Complete a Radioactive Shipment Record (form **A-6003-214**) or Onsite Routine Radioactive Shipment Record (form **C-6000-528**C-6000-528) in accordance with paragraph 3.1.4 or 3.1.5. This completed form must accompany the shipment to the consignee's facility.

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12. Supervise and approve the loading and securing of packages into or onto the transport vehicle. It is the packager/shipper's responsibility to inspect and approve securing of all loads to ensure tie-down requirements are met.

13. Ensure that the transport vehicle is placarded as required in 49 CFR Part 172, Subpart F.

14. Make the following notifications, when necessary:

    a. Notify the on-duty Hanford Fire Department battalion chief of the starting time, estimated duration of the shipment, route to be followed, and destination to expedite assistance, if needed.

    b. Notify Hanford Patrol of the departure time, route, destination, and estimated time of arrival (ETA). Request escort service, as required.

15. Ensure that the carrier has received instructions pertaining to any administrative controls specified.

16. Obtain the driver's signature on the Radioactive Shipment Record (RSR) indicating acceptance of the shipment; provide the completed RSR to the truck driver, as appropriate.

17. Ensure that the appropriate emergency response phone number and response guide is documented on the shipment.

18. Advise receiver of the estimated time of arrival and request confirmation of delivery on shipments exceeding Type A quantities.

19. Maintain a copy of the RSR for three years as a record of the shipment (see HNF-IP-0842, Volume 18, Section 1.2, for RSR retention periods).

3.1.3 Shipment of Material

The vehicle driver:

1. Ensures that the vehicle is appropriate for the load and free of defects that could affect the safe transport of the material.

2. Ensures preventive maintenance and Class A/B, or equivalent, inspections are current and required safety equipment is on board.

3. Ensures that the shipment is properly positioned and secured to the vehicle with concurrence by Waste Management Services personnel upon inspection.

4. Ensures that the vehicle is placarded for the cargo, as appropriate, and documented on shipping paper in appropriate box.

3.1.4 Preparation of Radioactive Shipment Records

NOTE: Minor changes on an RSR may be implemented in the field with concurrence by Waste Management Services by drawing a line through the initial entry, entering the correction, and having the authorized shipper initial and the date change.

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1. Complete block 1, Ship From section, including company, street address, contact, and phone.

2. Complete block 2, Ship To section, completing all information requested.

3. Provide RSR number in block 3.

4. Check block 4, as applicable, including Shipment Authorization number, if applicable. Indicate if the shipment is prepaid or collect. Indicate the mode of transport.

5. In block 5, place an "X" in applicable box in Proper Shipping Name (PSN) Section. If a Reportable Quantity is being shipped, mark "RQ." **If a U.S. Environmental Protection Agency waste is being shipped as specified in 40 CFR Part 262, mark "Waste."**

6. Check appropriate box/boxes in block 6 for Markings Applied, as applicable.

7. Identify the physical and chemical form by checking the applicable boxes of block 7.

8. If the material meets definition of Low Specific Activity or Surface Contaminated Object, mark the appropriate in block 8, if applicable.

9. Enter Emergency Response information in block 9, and phone number, and applicable Emergency Response Guides.

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10. Check the appropriate labels applied in block 10 and the block immediately to the right, including placarding and special shipment applications that are marked, as appropriate. If it is a Fissile Material Controlled Shipment, mark the package-per-vehicle statement immediately following this section.

11. Identify No. Pkgs., Model Package, COC/Spec, Serial No., Seal No., TI, Isotopes, Bequerrels/Pkg., and Gr. Wt in Kgs., in block 11.

12. Sign in block 12 and enter Date, Organization, and Cost Code in the shipper certification block.

13. Radiological control technician completes block 13 by including surface dose rate in Sieverts, Dose Rate at 1 meter, removable contamination smear surveys in becquerrels, vehicle dose rates in Sieverts, building, survey number, and date, and signs.

14. Driver identifies vehicle number and signs in block 14. This block is also used by the receiver to verify receipt of the shipment with signature and date.

15. Authorized off-site shipper completes and signs block 15 for off-site DOT compliance verification.

16. For air shipments, complete block 16.

17. Duratek Federal Services completes and signs block 17 for final off-site shipment authorization and distributes copies as follows:

    White (top copy) - Retained by authorized shipper
    Goldenrod (bottom copy) - Retained by radiological control technician at origin
    Canary - Given to the receiver after receipt and signature
    Green - After receipt and signature of receiver, forwarded to Waste Management Services (MSIN R1-51)
    Pink - Retained by generator, if different than the authorized shipper at origin.

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3.1.5 Processing On-Site Routine Radioactive Shipment Records

Due to their frequency and uniformity of contents and packaging, certain on-site radioactive material shipments are considered routine. The Onsite Routine Radioactive Shipment Record

(ORRSR) provides preprinted shipment requirements and limitations for purposes of time savings and convenience. The preprinted requirements and limitations specified must be adhered to when making a shipment using the ORRSR. Violations or misuse will result in withdrawal of the ORRSR.

The Onsite Routine Radioactive Shipment Record (site form C-6000-528) allows qualified personnel, as well as authorized hazardous material shippers, to certify that the shipment meets all the requirements as set forth on the ORRSR.

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The Onsite Routine Radioactive Shipment Record--Authorized Shipper (site form C-6000-528) requires that each shipment be reviewed and certified by an authorized hazardous material shipper.

Operating Organization

1. Prepare a draft ORRSR as follows:

   a. FOR THE SHIPMENT OF. Use the proper shipping name of the material and package description (model, etc.).

   b. BETWEEN. List buildings and areas that shipment will be going to and from. If several areas are involved, "All Areas Hanford Site" may be listed.

   c. NO. Obtain an identifying number by area, year, and operations group for each routine from Waste Management Services.

   d. COPY NO. The blue card stock working copies are prenumbered before being issued by Waste Management Services. The originator is responsible for ensuring adequate supplies of ORRSRs are issued and maintained so operations is not affected when the Shipment Record portion on the reverse side is completed. Completed ORRSRs shall be returned to Waste Management Services immediately and a new one issued. Upon revision of the ORRSR, all previous copies still in the field shall be recalled by the originator and returned to Waste Management Services for accountability.

   e. VOID DATE. Void the ORRSR on the date shown; this date will never be over one year from date of issue.

   f. DESCRIPTION OF RADIOACTIVE CONTENTS. Identify activity/quantity limits for each radionuclide to be shipped based on calibration, characterization, or calculation.

   g. PACKAGE REQUIREMENTS. Describe the containment and package. List all approval documents relating to the package and procedures used by operations personnel.

h. RADIOLOGICAL PROTECTION REQUIREMENTS. Describe the radiological protection requirements (e.g., the limits for the package described on the ORRSR).

All labeling shall meet DOT regulations. Subsidiary hazard class labels shall be used, when appropriate, and as specified in part 1.2.2. (5)(e)(f) of this section. List any radiation work permits (RWPs) related to packaging, handling, shipping, and transporting for both the shipper and receiver.

i. QUALIFIED PERSONNEL. In all cases, the determination of personnel qualification is by the responsible manager's approval on the ORRSR. Auditable records documenting that only qualified individuals are assigned organizational shipping responsibilities are required.

j. SPECIAL REQUIREMENTS. Specify special instructions, including specific tie-down requirements, if applicable.

k. CARRIER INSTRUCTIONS. Check each requirement for the carrier's attention. Include special instructions above.

l. ROUTINE AUTHORIZATION. ORRSRs of this type discussed above are authorized by Waste Management Services after other approvals are secured. Qualified personnel may certify these shipments on the reverse side.

m. AUTHORIZED SHIPPER. ORRSRs of this type discussed above require review and certification signatures of authorized shippers for each shipment on the reverse side.

n. APPROVALS. The routine is reviewed and approved periodically on a case-by-case basis. Approvals are required by all organizations listed on the form.

2. Forward the ORRSR to Waste Management Services to coordinate the review and approval cycle.

Waste Management Services

3. Ensure requirements, limitations, and supporting documentation specified on the ORRSR are reviewed and approved by the following organizations:

- Operations management (management of organization requesting ORRSR)
- Radiological Control manager
- RPP Safety Oversight

- Transportation Coordinator (author of ORRSR and issuing

organization)
- Manager, Waste Management Services.

Authorized Shipper

4. Complete Shipment Logs on the reverse side of the ORRSR.

5. When all lines of the log are filled or the ORRSR is no longer needed or passes the void date, return the ORRSR to Waste Management Services for maintaining as a record.

3.2 Radioactive Material Not Regulated by DOT.

The shipment of material having a specific activity less than the US Department of Transportation (DOT) regulations of 70 Bq (0.002uCi) per gram but above the limits of (HNF-5183 table 2-2) are controlled such that the occupational exposure to the radioactive materials during loading, unloading, container inspection, container surveys and container labeling is maintained As Low As Reasonably Achievable (ALARA). The need is to ensure that the receiving Facility Radiological Control Organization is aware that radioactive materials are being received so appropriate controls can be employed. The following requirements shall be implemented on all shipments of radioactive material that are not regulated by DOT:

- All shipments of radioactive materials having specific activities less than 70 Bq (0.002uCi) per gram, but greater than the limits specified in (CH2M HILL Radcon Manual), will be shipped in a container that ensures no loss of the radioactive material during loading, inspections, transportation and unloading.

- The shipping documentation will have the following statement placed on it. ["The following Container(s) _____ contain RADIOACTIVE MATERIAL at concentrations that are not regulated for transportation per 49 CFR 173.403 but are not releasable per DOE Order 5400.5"]

- The Shipping Facility Radiological Control Organization will provide a Radiological Survey Report to the Receiving Facility Radiological Control Organization. The Radiological Survey Report will identify the package radiation exposure rates (i.e. contact and 30 cm. Readings), the expected radionuclides, associated activity levels and package contamination levels, including an evaluation of hard to detect radionuclides (e.g. H-3), when necessary. The Radiological Survey Report can be sent with the shipment as part of the shipping documents.

3.3 Fissile Material and Special Nuclear Material

The shipment of fissile material requires additional controls beyond those needed for non-fissile radioactive material. Fissile material is defined in 49 CFR Part 173.403 as plutonium (Pu)-238, Pu-239, Pu-241, and uranium (U)-233, U-235, or combination of these radionuclides. Fissile material requires controls for criticality safety and accountability and, since DOT designated fissile material is also SNM of national strategic importance, additional controls for security and safeguards are also mandatory. The shipper ensures the appropriate qualified personnel are involved in the shipment of fissile material.

3.4 Fissile Excepted Material – On-Site/Off-Site Shipment

Fissile material is classified as either fissile or fissile excepted material. Fissile excepted material is exempt from criticality safety packaging requirements. These materials must still be shipped in accordance with both shipping and receiving facility fissionable material limits and restrictions. The most common exception is no more than 15 g fissile material in a package. If material is transported in bulk, the 15 g limitation applies to the conveyance. Additional fissile material exceptions are given in 49 CFR 173.453.

Shippers must evaluate fissile material packages and shipments per limitations specified in 10 CFR 71.18 through 71.24, 71.35, and 49 CFR Parts 173.457 and 173.459. (4.7.p, 4.7.q) This requires the shipper to evaluate activity and packaging per these section limitations. The requirements in these sections have become intermixed. Fissile classes are no longer used.

3.5 Fissile Material – Off-Site/On-Site Shipments

All off-site shipments (>15 g) of fissile material shall be packaged either in DOT specification packages consistent with 49 CFR 173.417, or in packages approved by the DOE or the NRC for transportation of fissionable material. Approved packages do not require additional criticality safety reviews. (4.7.d)

Off-site shipments shall be in accordance with the package COC, or as specifically described in 49 CFR for DOT specification packages. This certificate shall be posted or readily available within the loading areas and any place where fissile material is stored in the package. The Transport Index shall be posted on the package.

All on-site shipments (>15 g) of fissile material not packaged in off-site packages shall be packaged in packages **with an approved PSSD.** Nuclear Safety & Licensing shall review on-site packages for criticality safety concerns. On-site package design, when coupled with other considerations, shall provide criticality safety protection consistent with protection provided by approved off-site packages.

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On-site shipments shall be made in accordance with both shipping and receiving facility criticality safety specifications or facility fissile material status and the package authorized fissile contents based on the package safety analysis documentation. The package **PSSD** shall be available for use within the loading and unloading areas or any place where packages containing fissionable material are stored.

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3.6 Accountable Material

Accountable materials are nuclear materials so designated by the Secretary of Energy and at present include: depleted uranium, enriched uranium, americium-241, americium-243, curium, berkelium, californium, plutonium 238-242, lithium-6, uranium-233, normal uranium, neptunium-237, deuterium, tritium, and thorium. HNF-EP-0063, "Hanford Site Solid Waste Acceptance Criteria,"

describes accountable materials as any materials that contain 0.05 times or more of the reporting unit of one or more of the above listed materials, elements, or isotopes. Some of these materials are also referred to by more general terms:

- Nuclear materials
- Special nuclear materials
- Source materials.

Accountable nuclear materials are controlled and accounted for as directed by DOE 5633.3B. (4.13) Material shipments and transfers must be documented and controlled in conformity with this document.

3.7 Approvals for Off-Site Shipments of Radioactive Material

Off-site shipments and certain on-site movements of any radioactive material, whether accountable or not, require approval by Safeguards and RL. Non-accountable radioactive material shipments and some small amounts of accountables are generally covered by a blanket approval obtained at the beginning of each fiscal year; approvals for larger amounts of accountable materials are generated on a case-by-case basis.

The shipment originator initiates application for approval by submitting a Radioactive Material Action Request (form BC-7200-035) to Safeguards. Safeguards reviews the request and submits it to RL for approval.

HNF-IP-1019 gives guidance for generating the approval request and the correct accountability forms.

3.8 Categorization and Physical Protection for SNM Shipments

Off-site shipments of SNM must comply with the physical protection requirements of 10 CFR, 49 CFR, and DOE 5633.3B.

Whether on-site or off-site, the degree of security imposed on the shipments is determined by the category amounts of SNM. DOE 5633.3B defines the minimum requirements for safeguarding SNM by categories while in transit.

Documentation for Category I shipments is classified. Certain Category II shipments may be classified depending on the material and the above documents.

3.9 Radioactive Mixed Waste

Radioactive mixed wastes are radioactive wastes that are contaminated with wastes that are hazardous/dangerous as defined in 40 CFR 261 and/or WAC 173-303. The radioactive component of mixed waste is regulated under the Atomic Energy Act of 1954 (AEA). The non-radioactive hazardous component of mixed waste is regulated under the Resource Conservation and Recovery Act (RCRA). To the extent that RCRA is not inconsistent with the AEA, mixed waste must be handled in accordance with the requirements of both federal laws.

It is mandatory that radioactive mixed wastes be packaged and shipped in accordance with DOT hazardous material regulations as set forth in 49 CFR Parts 171-179 and DOE orders. Certain exceptions may be granted by applying for a DOT exemption for offsite shipments or a DOE-Headquarters alternative or DOE field office exception for onsite shipments (see DOE **460.1B** for administrative procedures that apply). DOE policy is that these options not be used unless extraordinary circumstances exist that would justify noncompliance with established regulations.

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Radioactive mixed waste at Hanford must be prepared for storage or disposal in accordance with Hanford Site Waste Acceptance Criteria, as applicable.

Radioactive mixed wastes at Hanford must be shipped in accordance with applicable DOT regulations or under a DOE approved **PSSD.** Shipping paper documentation of radioactive mixed waste shipments must consist of RSRs and Uniform Hazardous Waste Manifest when required for the type and quantity of material being shipped.

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3.10 Packages Approved for On-Site Use on Public Access Roadways

All radioactive materials transported over on-site roadways that are open to the public (DOT definition of "in-commerce") must be in compliance with DOT regulations. All shipments south of the Wye Barricade are considered "in-commerce" and subject to DOT jurisdiction. This applies to both public access roadways and rail crossings with which they come in contact. If the shipment does not meet these regulations, transporting on the Hanford Site may be done during off-peak hours with the roads closed and/or crossings manned by the Benton County Sheriff or Hanford Patrol to prevent public access to the shipment. This temporary provision allowed by DOT removes the "in-commerce" by physically eliminating unrestricted public access by the use of gates and guards. This process has been reviewed and approved by both the DOT and DOE. For these shipments, packages approved only for on-site use by **packaging specific safety documents (e.g., PSSD)** are authorized. In addition to the road closure requirements, some other safety constraints may also involve speed restrictions for the shipment as addressed in the applicable safety analysis documentation.

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3.11 Radiological Vehicle Control

Radiologically controlled vehicles, formerly referred to as "regulated vehicles," do not qualify as radioactive material shipments by DOT definition and, therefore, are not documented on an on-site RSR. Movement and management of these vehicles are covered under an approved program, documented in HNF-IP-0842, Volume 7, Section 16.5. This program identifies responsibilities and requirements for managing all radiological controlled vehicles, including survey requirements and identification of the vehicles as per 10 CFR Part 835, Appendix I, which requires the placement of a decal bearing a trefoil symbol and the words "Caution Radioactive Material" posted on the front, back, and both sides of the vehicle. HNF-5183 provides this information in Article 412.

3.12 Receipt of Radioactive Shipments

The shipper:

1. Arranges for one of the following actions to be performed when packages are expected to be received from radioactive material transportation that contain quantities of radioactive material in excess of Type A quantity:

   a. Takes possession of the package when the carrier offers it for delivery.

   b. Receives notification as soon as practicable after the arrival of the package and takes possession of the package expeditiously after being notified.

2. Upon receipt of radioactive material shipments, ensures the receiving organization inspects the shipment for damage, loss, or evidence of leakage.

3. Conducts a radiation and contamination survey of external surfaces to determine radiological conditions of the package(s) and vehicle, as soon as possible after receipt of the package, but no later than eight hours after the beginning of the work day after receipt of the package in order to verify that external surfaces are less than the controlling limits.

4. If conditions are greater than the controlling limits then:

   a. Detain the contaminated package or transport vehicle.

   b. Immediately notify the delivering carrier so that other potentially contaminated equipment /vehicles can be surveyed.

   c. Control the contaminated package or transport vehicle to prevent a possible spread of contamination.

4.0 SOURCES

1. AL-56XA, “DOE Transportation Safeguards System.”

2. Atomic Energy Act of 1954.

3. 10 CFR, “Energy.”

4. 40 CFR, “Protection of Environment,” Part 32, “Standards Applicable to Generators of Hazardous Waste.” (S/RID)

5. 40 CFR, “Protection of Environment,” Part 761, “Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution on Commerce, and Use Prohibitions.” (S/RID)
   a. Section 40(b).
   b. Section 40(e).

6. 49 CFR, "Transportation," Part 172, "Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements." (S/RID)
   a. Section 200, "Applicability."
   b. Section 201, "General Entries."
   c. Section 202, "Description of Hazardous Material on Shipping Papers."
   d. Section 203(b), "Additional Description Requirements."
   e. Section 203(c), "Additional Description Requirements."
   f. Section 203(d), "Additional Description Requirements."
   g. Section 203(e), "Additional Description Requirements."
   h. Section 203(h), "Additional Description Requirements."
   i. Section 204, "Shipper's Certification."
   j. Section 205, "Hazardous Waste Manifest."
   k. Section 300, "Applicability."
   l. Section 301, "General Marking Requirements for Non-Bulk Packagings."
   m. Section 302, "General Marking Requirements for Bulk Packagings."
   n. Section 303, "Prohibited Marking."
   o. Section 304, "Marking Requirements."
   p. Section 310, "Class 7 (Radioactive) Materials."
   q. Section 312, "Liquid Hazardous Materials in Non-Bulk Packagings."
   r. Section 316, "Packagings Containing Materials Classified as ORM-D."
   s. Section 324, "Hazardous Substances in Non-Bulk Packagings."
   t. Section 332, "Identification Number Markings."
   u. Section 334, "Identification Numbers; Prohibited Display."
   v. Section 336, "Identification Numbers; Special Provisions."
   w. Section 400, "General Labeling Requirements."
   x. Section 400(a), "Exceptions from Labeling."
   y. Section 401, "Prohibited Labeling."
   z. Section 402, "Additional Labeling Requirements."
   aa. Section 403, "Class 7 (Radioactive) Material."
   bb. Section 404, "Labels for Mixed and Consolidated Packaging."
   cc. Section 405, "Authorized Label Modifications."
   dd. Section 406, "Placement of Labels."
   ee. Section 407, "Label Specifications."
   ff. Section 500, "Applicability of Placarding Requirements."
   gg. Section 502, "Prohibited and Permissive Placarding."
   hh. Section 504, "General Placarding Requirements."
   ii. Section 505, "Placarding for Subsidiary Hazards."
   jj. Section 506, "Providing and Affixing Placards: Highway."
   kk. Section 507, "Special Placarding Provisions: Highway."
   ll. Section 516, "Visibility and Display of Placards."
   mm. Section 600, "Applicability and General Requirements."
   nn. Section 602, "Emergency Response Information."
   oo. Section 604, "Emergency Response Telephone Number."

7. 49 CFR, "Transportation," Part 173, "Shippers–General Requirements for Shipments and Packagings." (S/RID)
   a. Section 24, "General Requirements for Packagings and Packages."
   b. Section 29, "Empty Packagings."
   c. Section 415, "Authorized Type A Packages."
   d. Section 417, "Authorized Fissile Material Packages."
   e. Section 421, "Excepted Packages for Limited Quantities of Class 7 (Radioactive) Materials."
   f. Section 422, "Additional Requirements for Excepted Packagings Containing Class 7 (Radioactive) Materials."
   g. Section 423, "Requirements for Multiple Hazard Limited Quantity Class 7 (Radioactive) Materials."
   h. Section 424, "Excepted Shipments for Radioactive Instruments and Articles."
   i. Section 427, "Transport Requirements for Low Specific Activity (LSA) Class 7 (Radioactive) Materials and Surface Contaminated Objects (SCO)."
   j. Section 428, "Empty Class 7 (Radioactive) Materials Packaging."
   k. Section 431, "Activity Limits for Type A and Type B Packages."
   l. Section 441, "Radiation Level Limits."
   m. Section 442, "Thermal Limitations."
   n. Section 443, "Contamination Control."
   o. Section 448, "General Transportation Requirements."
   p. Section 457, "Transportation of Fissile Material, Controlled Shipments–Specific Requirements."
   q. Section 459, "Mixing of fissile material packages."
   r. Section 475, "Quality Control Requirements prior to each Shipment of Class 7 (Radioactive) Materials."

8. 49 CFR, "Transportation," Part 177, "Carriage by Public Highway," Section 848, "Segregation of Hazardous Materials."

9. DOE **460.1B,** "Packaging and Transportation Safety."

Deleted: 460.1A,

10. DOE 460.2, "Departmental Materials Transportation & Packaging Management."

11. DOE 5633.3B, "Control and Accountability of Nuclear Materials."

12. DOE 5820.2A.
   a. Chapter II, Section 3.d.
   b. Chapter III, Section 3.d(2).

13. DOE/RL- 96-109, "Hanford Site Radiological Control Manual."

14. "Hanford Site Solid Waste Acceptance Criteria."

15. "Hazardous Materials Packaging Directory."

16. NMMSS Report D-2, "Directory of Reporting Identification Symbols (RIS)."

17. "Resource Conservation and Recovery Act."

18. RPP-MP-003, "Integrated Environment, Safety, and Health Management System Description for the Tank Farm Contractor."

19. WAC 173-303, "Dangerous Waste Regulations." (S/RID)
    a. Section 190.
    b. Section 180, Introduction and (1).
    c. Section 180(2).
    d. Section 180(3).
    e. Section 180(4).
    f. Section 180(5).
    g. Section 370(2).
    h. Section 370(3).
    i. Section 370(4).

20. DOE/RL – 2001-36, "Hanford Sitewide Transportation Safety Document."